

BT-7/M-21**47168****NON-CONVENTIONAL MACHINING**

Paper–ME-415 N

Option–I

Time allowed : 3 Hours**Maximum Marks : 75**

Note : Attempt **five** questions in all, selecting at least **one** question from each unit. All questions carry equal marks.

UNIT-I

1. (i) What do you mean by Non-Conventional Machining processes? Explain its classification along with the type of energy used. 7
- (ii) Compare and justify the need of Non-Conventional Machining with Conventional Machining with suitable practical applications. 8
2. (i) Explain Ultrasonic Machinery set up along with its component with neat sketches. 8
- (ii) Explain the mechanics of cutting with the help of model proposed by Shaw using Grain Throwing Model and derive expression for volumetric material removal rate. 7

UNIT-II

3. (i) Explain principles of Electrochemical machining and draw the schematic layout of ECM set-up. 7
- (ii) Explain how electrochemical equivalent of alloys and also derive the expression for material removal rate in ECM. 8
4. (i) Explain analysis of RC circuits used in EDM. Derive expression of Material Removal Rate. 7
- (ii) Explain effect of process parameters of EDM on the performance characteristics. 8

UNIT-III

5. (i) Explain effect of process parameters of AJM on the performance characteristics. 7
- (ii) Explain setup of AJM (Abrasive Jet Machining) in detail. 8
6. (i) Explain Electron Beam Machining process in detail with the help of neat sketches. 7

- (ii) Explain Laser Beam Machining process in detail with the help of neat sketches. 8

UNIT-IV

7. (i) What do you mean by Rapid Prototyping process? Explain process of SLA with the help of neat sketch along with its advantages and limitations (SLA - Stereolithography). 7
- (ii) Explain Selective Laser Sintering process in detail. 8
8. Explain any three types of rapid tooling used in Rapid Prototyping along with advantages, limitations and applications. 15

